REQUEST FOR RECONSIDERATION

Claims 1-8 and 10-21 remain be active in this application.

Claim 1 is amended to incorporate Claim 9, in part, and lines 34-41 at page 4 of the specification, which defines the starter substances in the claimed process for preparing autocatalytic polyether alcohols.

Claim 21 also finds support in Claim 9 and lines 34-41 at page 4 of the specification.

As the amendments last-filed were not entered, the amendments and remarks to the previous action are again presented in this filing.

No new matter is added.

Autocatalytic polyether alcohols have been used in the preparation of polyurethanes. Autocatalytic polyether alcohols may contain tertiary amino groups which catalyze the urethane reaction and avoid the use of a separate tertiary amine catalysts which can migrate out of the polyurethane and create an unpleasant odor. In spite of avoiding the problem of migration associated with using a separate tertiary amine catalyst, autocatalytic polyether alcohols have typically prepared have suffered from an odor problem with the polyurethanes and unsatisfactory age resistance for the polyurethane. Thus, production methods which can avoid significant formation of by-products are sought.

The claimed invention addresses this problem by providing a process for preparing autocatalytic polyether alcohol comprising reacting an H-functional starter substance that are liquid at room or the reaction temperature with alkylene oxides comprising dissolving the starter substance in a solvent and reacting a solution with alkylene oxides. Applicants have discovered that reaction of starter substance, which is dissolved in a solvent, as a solution with alkylene oxides provides for an autocatalytic polyether alcohol of narrow molecular weight distribution, low by-product content and which has low amine emissions when used to

prepare a polyurethane (page 3, lines 31-33 and page 8, lines 16-24 of applicants' specification). Such a process is nowhere disclosed or suggested in the cited references of record.

The rejections of claims 1-4, 6, 7-18 and 20 under 35 U.S.C. § 103(a) over Schilling et al. U.S. 6,423,759 in view of Waddington et al. U.S. 2003/0100699, of claim 5 under 35 U.S.C. § 103(a) over Schilling et al. in view of Waddington et al. in further view of Maassen et al. U.S. 3,941,769, of claim 7 under 35 U.S.C. § 103(a) over Schilling et al. in view of Waddington et al. in further view of Nishioka et al. EP 376,602 and of claims 7, 9 and 19 under 35 U.S.C. § 103(a) over Schilling et al. in view of Waddington et al. in further view of Hinz et al. U.S. 5,476,969 are respectfully traversed.

Schilling et al. describe forming a polyether polyol by suspending a solid polyhydroxyl compound in an amine-initiated polyol, heating the suspension and alkoxylating the heated suspension (see abstract). The starter substance of the reference is not catalytically active. The amine-initiated polyol is describes as produced by any known method, and generally by alkoxylating the amine initiator, either with or without an alkaline catalyst, until the desired hydroxyl number has been attained (column 3, lines 43-47). The polyhydroxyl compound is normally solid at the processing conditions (column 2, lines 31-35). After the suspension of solid polyhydroxyl compound in the amine-initiated polyol is formed, the suspension is adjusted to a temperature of from 90 to 140°C, followed by alkoxylation (column 4, lines 18-23).

Applicants understand that in the Advisory Action indicates that the examiner considers Schilling et al. to disclose dissolution of the solid polyhydroxyl initiator in the amine-initiated polyol (column 3, lines 53-57).

Notwithstanding this disclosure, however, the claimed invention is directed to a process for preparing an autocatalytic polyether alcohol, by reacting an H-functional

substance containing at least one amino group which is catalytically active in the urethane reaction and at least one group which is reactive toward alkylene oxides, by dissolving a starter substance in a solvent and reaction the solution with alkylene oxide.

Schilling et al. describes prior production of polyether polyols from solid initiators such as sucrose by dissolving or suspending the solid material in a solvent prior to reaction with alkylene oxide in order to facilitate processing of the reaction mixture (column 1, lines 11-16). It would not be obvious to use a solvent, if not necessary to obtain dissolution of a starter substance, as the use of a solvent is identified as generally undesirable due to the increase in reactor size, necessity for removal, and increased energy consumption. The starter substances are defined as in previous claim 9 and lines 34-41 at page 4 of the specification and all such amines are liquid at reaction temperature or room temperature (see Claim 21).

Applicants have discovered that dissolution of the starter substance defined in the claims (see Claims 1 and 21) with alkylene oxides in a solvent provides for a narrow molecular weight distribution and suppression of secondary reactions. Since Schilling et al. fails to disclose or suggest a step of dissolving a starter substance which are liquid at reaction temperature or room temperature the claimed invention would not have been obvious over Schilling et al.

Waddington et al. describes the preparation of an autocatalytic polyol in the absence of a solvent.

Waddington et al. makes no disclosure of any dissolving step of a starter substance having at least one catalytically reactive amino group and at least one group reactive with alkylene oxides in a solvent or a step of reacting a solution with alkylene oxide. The reference cites to U.S. 4,605,772 for a technique for preparing alkyl amines of Formula I, but there is no disclosure of dissolving a starter substance having at least one catalytically

reactive amino group and at least one group reactive with alkylene oxides in a solvent or reacting a solution with alkylene oxides. In no case does the combination of references suggest dissolving a starter substance which is as defined in Claims 1 and 21, in a solvent nor reacting a solution with alkylene oxides.

Thus, the only reference which describes the preparation of an autocatalytic polyether alcohol, does so in the absence of a solvent. There is no suggestion of preparing an autocatalytic polyether alcohol in a solvent.

To the contrary, Schilling et al. describes that solvent use in the preparation of polyether polyols is to be avoided as such a solvent must be removed which consumes time and energy. Thus, the evidence reflects that autocatalytic polyether alcohols have been prepare in the absence of a solvent, and that in general solvents should be avoided in the preparation of polyether alcohols.

Moreover even if the polyhydroxyl compound were dissolved in the amine-initiated polyol co-initiator, such a phenomena would not make obvious dissolution of a starter substance that are liquid at reaction temperature or room temperature, see list of starters in Claims 1 and 21.

As noted above, the amine-initiated polyol is a co-initiator used along with a polyether polyol prepared by alkylene oxide addition to a polyhydric alcohol suspended in the amine-initiated polyol co-initiator. Thus, Shilling et al. at best, would suggest dissolution of a polyhydric alcohol, but not starters that are liquid at reaction temperature or room temperature, see list of starters in Claims 1 and 21.

Thus, since the cited references fail to suggest a step of dissolving a starter, the claimed process would not have been obvious and withdrawal of the rejections under 35 U.S. C. 103 (a) is respectfully requested.

Moreover, applicants observe a reduction in odor for a polyurethane prepared as claimed by dissolving a starter substance with a catalytically active amine group in a solvent.

The examiner's attention is directed to examples 8 and 9 appearing on pages 10 and 11 of applicants' specification. Example 8 prepared with the autocatalytic polyol of example 2 (no solvent) was tested for VOC at 20 ppm containing dimethylamino groups. In contrast, example 9, prepared using autocatalytic polyol from example 3 (polyether alcohol solvent) was tested and no VOC was detected. Thus, applicants have demonstrated that an autocatalytic polyol as claimed produces a polyurethane of reduced VOC as compared with using an autocatalytic polyol prepared in the absence of a solvent. Such a result is not suggested by either of Schilling et al. or Waddington et al.

Applicants understand that the Examiner views Applicants' demonstration of odor reduction to not have been a comparison against the closest art of record and/or not commensurate in scope with the claims. Nonetheless, these data demonstrate certain advantages of the claimed process and as such is probative evidence of advantages not at all suggested by the cited art.

As to the aspect of whether the data are commensurate in scope with the claims, it is apparent that the starter substances have been defined in the claims, see Claims 1 and 21. See also, e.g., *In re Kollman*,[1]

> We feel that the unobviousness of a broader claimed range can, in certain instances, be proven by a narrower range of data. Often, one having ordinary skill in the art may be able to ascertain a trend in the exemplified data which would allow him to reasonably extend the probative value thereof. The proof, thus considered, might then be sufficient to rebut a PTO holding of prima facie obviousness. 595 F.2d at 56, 201 USPQ at 199.

[1] 595 F.2d 48, 201 USPQ 193 (Fed. Cir. 1979).

See also *Ex parte Winters*, 11 USPQ2d 1387, 1388 (Bd. App. & Inter. 1989) (In order to prove non-obviousness for a genus of compounds, only *representative* species need be shown.).

The evidence that has been provided demonstrates a trend from which one of ordinary skill in the art could conclude that the evidence is commensurate in scope with claimed subject matter that is alleged to be *prima facie* obvious.

As an additional point of consideration, the Office has failed to show why evidence "missing" (i.e., additional data points) would not be expected to be of similar probative value to the evidence already of record see *In re Cescon*[2] which stated:

> Our disagreement with the action of the Patent Office at this level arises from overly stringent standards set up for evaluating appellant's objective evidence. It is true that the claims are broadly drawn to the presence of the imidazolyls in the environment of an inert solvent or substrate. The examples providing comparisons with analogously substituted isomers or unsubstituted imidazoles, on the other hand, are limited to the use of a benzene solution. Not all compounds encompassed by the claims are tested. But ample data has been provided to establish the correlation between ortho substitution on the 2-phenyl ring and greatly increased color fading rates. **Moreover, no factual basis appears in the record for expecting the compounds to behave differently in other environments.** Accordingly, we reverse the 103 rejection. *Id* at 1334, 177 USPQ at 267 (emphasis added).

In view of the deficiencies of the cited references, the claimed invention is not rendered obvious by the cited combination of references and withdrawal of the rejections under 35 U.S.C. §103(a) is respectfully requested.

The rejection of claim 7 under 35 U.S.C. § 112, second paragraph has been obviated by appropriate amendment.

[2] 474 F.2d 1331, 177 USPQ 264 (CCPA 1973).

Applicants have now amended claim 7 to recite "said alkaline catalyst." In view of applicants amendment, withdrawal of this ground of rejection is respectfully requested.

Applicants submit that this application is now in condition for allowance and early notification of such action is earnestly solicited.

Respectfully submitted,

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